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Share Repurchase and Cash Dividend - Substitute or Complement? Analysis from the Vietnam Securities Market

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A B S T R A C T

Purpose: The purpose of this report was to assess the relationship among the cash dividend payout and share repurchase, through essential cash distribution methods adopted by Vietnamese publicly listed companies. The complementary along with substitute relationship from these financial practices might contribute to determine the financial managerial behavior in Vietnam as a leading development emerging market within Asia Pacific area.
Design/methodology/approach: The research applied regression analysis technique to determine the nonlinear relationship among the share repurchase and cash dividend.
Findings: The research found the nonlinear relationship among the change in dividend along with the repurchase yield. Moreover, the research found a significant positive correlation which reveals the prominent of complementary impact in the complete sample. The results and estimations of the research are consistent in robustness tests. There is a nonlinear relationship between the change in dividend and the repurchase yield. In addition, a significantly positive correlation reveals the dominant of complementary effect in the whole sample. The results are consistent in robustness tests.
Research limitations/implications: It is crucial to ensure that there is an essential scope for the enhancement which remains and it is a component of the future study such as the influence of the stock dividend through various practice while companies are partly dominated or effected by the government, through the characteristics as the emerging markets such as Vietnam, as they are interesting topics which need further study.
Originality/value: Through a comprehensive analysis, the study outcomes propose that Vietnamese listed companies should meticulously assess their future growth concerning share repurchase and other capital distribution activities. This strategy should take into account the involvement of various stakeholders and their benefit.

Keywords: Share repurchase, cash dividend, Vietnamese stock market, Substitute, Complement

I. Introduction

Comparing to other stock exchange, Vietnamese market is quite young, initiating with the development of the State Securities Commission, the regulator of the stock market by 1997, repurchases have been enabled by the initial operations of securities market during year 2000. Particularly with the initiating of the Ho Chi Minh City Stock Exchange in 2000, a trading platform for the stock of relatively large organization. Then the opening of Hanoi Stock Exchange in 2005 for the stock of comparatively

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SMEs (Kien and Chen, 2020).

The founders of the Vietnamese securities market successfully anticipated and contributed to the acceleration of the national economy amid rapid development. This transformation is attributed to the "equitization" process of various state-owned companies, which are pivotal in the Vietnamese economic sector, alongside joint-stock firms. Over the past few years, the stock market has experienced significant growth, evolving from just two main traded stocks to approximately 700 listed companies today. This transformation highlights the securities market as a crucial capital mobilization channel for the Vietnamese economy.

The years 2005 and 2006 marked rapid expansion for the Vietnamese market, but in 2007, a recession hit, resulting in share devaluation and investor losses. However, through regulatory improvements and economic support policies, Vietnamese companies stabilized their securities markets and resumed the development process. Many Vietnamese listed companies now prefer cash dividends, with some opting for stock dividends to distribute funds to stakeholders effectively. While share repurchases were initially limited, they gained wider acceptance after 2007. Only 5 to 7 companies engaged in buybacks in 2005 and 2006, but the numbers increased to 16 in 2007 and 18 in 2010. This number keeps increasing for recent time, making some questions need to be answered.

> What is the key purpose for this change in behavior of company's payout? Why different companies now prefer to spend the additional funds for buy back the shares instead of pay dividends?

There are number of different past researches revealed in the literature that, researchers mainly emphasize on alternative hypothesis. They are mainly signaling hypotheses along with the free cash flow hypothesis. Based on the signaling hypothesis it is argued that when managers perceive or assume that their firms' stocks are undervalued, they would pay the premium to buy their own shares to effectively send the signal to minimum-informed outside investors that firm's future value is not accurately indicated in the stock price and future prospects for any immediate investment into their stock would be enhancing. On the other hand, the free cash flow hypothesis argues that companies through an excess cash however with poor portfolio of investment opportunities would encounter the agency costs, if the excess in not distributed among the key shareholders. Encountering these agency costs, managers should have incentives to effectively invest the extra funds in compensation, empire building or few other projects that might drive to negative or adverse net present value. In this situation, the stock repurchases would be the key for companies to distribute their increase free cash flow therefore restrict the probability of any wasteful investment.

According to the research background, there are limited studies in context of share repurchase by following Vietnamese database. In order to reduce research gap and examine the research objectives, the present research intends to investigate the contribution of share repurchase activities within Vietnamese market. It is essential because it would improve the understanding of overall corporate payout policy within Vietnamese market and provides attractive emerging markets along with recognized rapid pace of growth and development. In addition, it might reveal few secrets for assessing the future trends relating to the share repurchase within market such as if repurchases could be adopted as the substitutes for dividends in Vietnamese market. These trends are highly attractive and feasible for the research.

II. Literature Review

According to Jong-Cook & Bao Trung (2016) cash flow management in any organization is effectively considered as one of the highly crucial functions.

It is found that with the positive income or free cash available, organizations are effectively willing to distribute the surplus to their shareholders due to response to their investment. From the past few years, the world's listed organizations have over-whelmingly preferred to effectively pay dividends in form of stock or cash. Kien & Chen (2020) found that dividend policy has become highly essential decision for organization to whether profit need to be distributed to investors or reinvested for the future growth and opportunities. However, from previous decades, the share purchase activity has extraordinary growth which becomes highly common practice within developed markets such as Europe and US from the mid-1980s (Grullon and Michaely, 2004). In the strong economies of the Asia-Pacific region, the adoption of share repurchases became prevalent following approvals by Australia in 1989, Hong Kong in 1991, Korea in 1994, and Japan in 1995. Presently, share repurchases have gained increasing popularity and are now more common than dividends. Even the Asia-Pacific and major stock markets are neither completely integrated nor entirely segmented (Chotigeat et al., 1996)

A. Share Repurchases

With the advancement and innovation several companies are working on adopting effective financial strategies to improve firm performance. In the current research there is a common motivation behind the research of repurchase that is to determine in the framework whether the free cash flow hypothesis along with signaling hypothesis is correct. The signaling hypothesis is mainly consistent with the concept of undervaluation where the listed firms believe that their stocks are not effectively valued as compared to their real value. Chen et al (2009) argued that this situation mainly led organizations to distribute their excess funds among shareholders through repurchasing their own stocks. This approach effectively supports in minimizing the number of outstanding shares that might support in increasing the stock price. The announcement or process to repurchase therefore is predicted to bring the positive market reaction. This concept is broadly accepted and is mainly supported by different number of researches (Jong-Cook & Bao Trung, 2016).

Moreover, other major explanation related to buyback actions is the free cash flow hypothesis. The companies adopt repurchases in order to minimize agency costs therefore they would adjust or settle with repurchase behavior to their cash position. Lie (2002) found that in case of separation of ownership and control in organization, it is recommended that the payout of cash flows to shareholder with either share repurchase or as dividends could minimize the agency costs. The encouragement of these ideas would enable companies with maximum amount of free cash which tend to have the maximum rate of repurchase (Byun et al., 2006).

The signaling and free cash flow hypotheses suggest that repurchases have various motivations, leading to increased complexity. However, a key question arises: Can dividends and share repurchases be used interchangeably? Even firms with profitable investment opportunities may retain more earnings (for Investment) and pay less dividends (Meric et al., 2003), however, research indicates that management tends to use dividends, rather than share repurchases, to signal the firm's quality (Allen et al., 2000), firms with good earning and investment may create dividend (Kim et al. 2006), indicating the two distribution methods are not interchangeable. Examining motives for repurchase activity, the primary reasons involve capitalizing on undervalued shares and distributing excess cash, implying that repurchases do not serve as substitutes for dividends (Dittmar, 2000). In terms of the nature of repurchases, it suggests that firms independently utilize repurchases and dividends at different points in the business cycle and based on varying firm characteristics (Jagannathan and Stephens, 2003).

In the emerging Vietnamese securities market, the availability and role of dividends and share repurchases remain uncertain. Several existing research on Vietnamese data explores the impact of dividends.

Alphonse & Quoc Trung (2014) found that dividend announcements influenced stock prices between 2006 and 2009, supporting the signaling theory. Conversely, Kim Thu et al. (2013) discovered a negative correlation between dividend payment ratios and company profitability in the Ho Chi Minh stock exchange from 2007 to 2012. While Vietnamese listed companies exhibit stable dividend policy behavior, research on share repurchases is limited. Byun and Bao Trung (2016) conducted a study from 2005 to 2014, suggesting consistency between repurchases and the signaling hypothesis in Vietnam.

B. Repurchase Regulations and Tax Policy in Vietnam

According to Vu (2019), share repurchase policies and regulations in Vietnam were implemented from the inception of the securities markets. Enforced through laws such as the Securities Law of 2005, Enterprise Law 2014, and Decree 60/2015.ND-CP, companies can engage in share repurchases using methods like fixed price tender offers, open market repurchases, private negotiation, and Dutch auction approaches. Open market repurchases are commonly preferred by Vietnamese companies for their main repurchase activity. Under these laws, companies are allowed to repurchase a maximum of 30% of their entire common stock. However, the board of directors can only decide to repurchase an additional 10% of outstanding shares, subject to market conditions and approval from shareholders in a general shareholder meeting. The repurchase might not be held by an IPO or right offering activity. The rules stipulate that the listed companies might purchase their own shares might be retained as treasury shares that could be applied subsequently for the stock dividend distributions and employee share option scheme or might be resold to the market after the six months by the repurchase data.

Due to shareholders' concerns about capital gains taxes related to repurchases, Vietnamese investors had two tax options when trading stocks. The first option required them to pay around 0.1% of the entire trade value immediately when the trade occurred. The second option involved being taxed at 20% at the end of the fiscal year based on their taxable income. Opting for the first option meant investors had to pay taxes regardless of gains or losses in trading, while the second option only taxed gains. However, to simplify tax planning, after 2015, Vietnamese authorities accepted only the initial tax option, requiring investors to remit around 0.1% of their entire trade value anytime they engaged in trading to fulfill their tax responsibility.

Likes other stock exchanges, it is revealed that Vietnams market enjoy a high number of companies pay out dividend, through round of around 80% during the time 2006 to 2011(Alphonse and Tran, 2014). Determination of this trend, require authorities to effectively promote or encourage additional investment in the stock market by offering highly attractive dividend tax policies in Vietnam. It's worth noting that whether the investors within corporate are domestic or foreign entities, they are all exempted by the dividend taxes within Vietnam. In addition, for different shareholders, they are recently accountable for around 5% of the personal income tax about the cash dividends obtained, this is considered as the flat tax rate for both international and local

Table 1. Tax rate by period in Vietnam

	Before 2009	01/2010 - 07/2011	8/2011 - 12/2012	2013-present
Individual investors	0%	5%	0%	5%
Institutional investor (Vietnamese and foreign)	0%	0%	0%	0%

Source: Circular No. 160/2009/TT-BTC; Circular No. 134/2011/TT-BTC; Decree No. 101/2011/ND-CP and Circular No. 111/2013/TT-BTC (Kien and Chen, 2020).

investors with-out considering any type of tax-resident status in Vietnam. Table 1 illustrates the tax rate on dividend based on multiple timeframes in Vietnamese market. Particularly the government implemented the 0% of dividend tax of individuals in few times to promote additional active trades.

Agree that capital and dividend gain taxation are significant determinants of a company's payout policy. Numerous studies support the positive impact of taxes on the choice of cash distribution among shareholders in various regions, including Sarig (2004). Moser (2007) provides strong evidence from the US market, particularly during the period of high tax rates on dividends from 1993 to 2002 (Jacob and Jacob, 2013). Similar outcomes are observed in the UK (Rau, 2002). These studies broaden the understanding of the relationship between repurchase and dividend activities within emerging economies, exemplified by the Vietnamese market.

C. The Distinctiveness of Vietnamese Listed Firms

Playing a vital role in Vietnam's socio-economic reform program known as the "Renewal," the Vietnamese government initiated the establishment of the stock market two decades ago to stimulate national economic development. Over the past 10 years, the market capitalization has surged approximately 17 times, rising from 22.7% of GDP in 2006 to 78.5% in the first half of 2019. This growth has attracted a substantial number of both domestic and international investors. Notably, around 2.28 million accounts were opened in the stock market (Vu, 2019).

In the context of the "Renewal" movement in the national economy, Vietnam has successfully transformed its state-owned businesses into listed companies due to the underperformance of state-owned equities (SOEs). This transformation aligns with the approaches of neighboring giant economies like China, where the government ensures control in crucial industrial sectors for national security and prosperity. This transformation raises concerns about the government's influence on companies' capital distribution decisions. Numerous studies have indicated differences in payout policies when state ownership is a factor. In global emerging economies like China, state-controlled companies tend to pay higher dividends compared to private businesses (Tai et al, 2005; Bradford, 2013). Initial research suggests that effective tax policies by authorities influence dividend preferences for low ownership holders, while large shareholders favor buyback decisions. Companies with government support often experience more significant impacts due to political and legal aspects and objectives.

In the realm of corporate governance and ownership structure, share repurchases result in higher ownership concentration and increased control for shareholders. Managers may utilize share buybacks to strengthen their control by increasing the number of shares in their possession. It aligns with the findings of Rhim et al. (2014), supporting the notion that the convergence of interests theory is applicable in cases where firms do not provide dividends or permit insider ownership. The influence of various or dominant shareholders in determining the company's financing decisions has long been recognized by researchers and economists. Due to fixed information costs and market analysis, different shareholders may benefit more in a buyback campaign, while minority shareholders are susceptible to potential expropriation.

In socialist economic systems like Vietnam, the government plays a crucial role as the market controller, despite many state-owned companies being equitized and listed on the stock market. The dominance of the state in these companies remains, making it challenging for private investors to take over due to political and legal complexities. As a result, the primary objective of share repurchases for initially state-owned listed firms may not be to fend off takeover activities. The increase in the number of stocks held to enhance managerial power might not be the primary concern for state-dominant companies, especially those with over half of their ownership belonging to the government. Repurchases with minimal attraction for wider ownership become

significant when considering various payout channels. The preference of SOEs in distributing cash flows to shareholders is interesting. The question arises whether they will adhere to the traditional method of dividend distribution or opt for flexibility by embracing alternative approaches like share repurchases. Given the significant number of initially state-owned listed firms with the government retaining substantial ownership, this characteristic presents a compelling aspect to explore payout policies, motivating researchers to delve into the payout behavior of the State-owned sector in the Vietnamese stock market.

From a governance perspective favoring creditors, the absence of robust legal policies to monitor the authority of dominant shareholders may lead to a payout policy that expropriates minority shareholders, reflected in minimal dividend payout ratios due to concentrated ownership structures (Sáez and Gutiérrez, 2015). The study underscores that, to safeguard creditors, the government may restrict cash distribution among shareholders until debts are repaid, encompassing various channels such as dividends and repurchases. Successful repurchases significantly impact financial structure by reducing available cash, resulting in maximum leverage ratios. Additionally, a company's existing leverage level can influence its repurchase decision. High-leverage companies tend to have fewer buybacks, although this relationship was inconclusive when retesting the impact of debt ratio on repurchase practices among listed companies (Brown et al., 2015). Therefore, the influence of capital structure should be reconsidered as an explanatory variable.

Researchers are keen to unravel the factors influencing variations in company capital redistribution policies using the latest data from Vietnamese listed companies. The inquiry aims to determine whether it aligns with the free cash flow hypothesis, remains consistent with the signaling hypothesis, or unveils additional dynamics that warrant exploration.

III. Methodology

A. Data Collection

The research sample comprises all repurchases undertaken on the Vietnamese Stock Exchange from 2008 to 2017. Relevant data, including repurchase dates, cash availability, company market and book values, total leverage ratio, repurchase volume, dividend payout, and company ownership, was sourced from the Vietnamese stock exchange databases, namely Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX). The collected data underwent analysis and cross-checked by the authors using third-party financial platforms like Vndirect, Fiinpro, and reputable online analysis sources such as vietstockfinance website.

As some Vietnamese companies pay dividends multiple times a year (quarterly or yearly), the study aggregated all dividends within a year to represent the annual dividend payout. The data underwent cross-verification with company financial statements, and payout amounts were carefully re-checked with business announcements. Any missing or unclear data were excluded from the tested sample, resulting in a final sample size of 174 observations for the study.

The research focuses on the value of the last repurchase, predicting future buybacks and changes in dividend value in the subsequent period as a means of differentiating between the signaling hypothesis and the free cash flow hypothesis. This establishes a link between buyback and dividend payout activities. The findings suggest that when a company signals its intention through repurchases to outsiders that its prospects are improving, there is a tangible decrease in dividend payout. This is because retained earnings, typically used for dividends, are redirected towards buybacks. Conversely, if management aims to distribute cash flow for investments, perks, or other projects, investors' reactions to the repurchase announcement depend on whether it indicates improved performance. Specifically, signaling implies enhanced performance, but improved performance does not necessarily imply signaling.

B. Methodology

In this study, the author employed a contemporary approach introduced by Brown et al. (2015) to explore the connection between changes in dividend payout and share repurchases. Specifically, the variance between the anticipated and actual dividend amounts was used to signify changes in the dividend policy. The repurchase yield served as an indicator of the extent of buybacks in the company's financial activities.

While share repurchases are a growing trend in the Vietnamese market, they are relatively young compared to dividend activities. The author decided to include only companies with completed repurchases in the sample due to the gap in the occurrence of these two financial decisions in different periods. Examining the financial payout behavior of these companies provides a clearer understanding of share buybacks in the Vietnamese market. Previous studies on the relationship between repurchases and dividend payouts have utilized various methods, such as multinomial logit model (Jagannathan, 2000), transition probability and cross-sectional regression (Grullon and Michaely, 2004), time series vector autoregression (Lee and Rui, 2007) or the truncated regression (Brown et al., 2015). These studies, though yielding diverse results, often share the characteristic of linear observations for payout methods. However, considering that annual payouts may vary over time in relation to stock returns (Kanas, 2005), and the board of directors seeks an optimal disbursement amount balancing profit sharing with firm development, there arises a question about the existence of a nonlinear relationship among financial payout methods.

With the unique data of the Vietnamese market and the lack of consistent studies on repurchase practices, the researcher aims to address this gap by applying nonlinear panel regression. Robustness tests will be conducted under different conditions to ensure the consistency of the findings.

In addition, given the substantial differences in payout levels among firms, with some engaging in high capital distribution and others allocating minimal funds to maintain their payout policy, it becomes pertinent to examine how different groups rank within the conditional population. Quantile regression, a suitable statistical tool for such inquiries (Koenker and Bassett, 1978), can shed light on these variations. Since the observed sample in this study consists only of firms that completed share repurchases, quantile regression proves useful for analyzing censored data (Lin, 2009), with nonlinear quantile regression particularly suitable for clustered data (Geraci, 2018). Therefore, to address the question of whether the relationship between dividend and repurchase depends on the program size of practiced buyback activity, a quantile regression model will be employed for further investigation to ensure result accuracy.

C. Dividend Change Measurement

Based on the research proposed by Brown et al. (2015), the study compares the variance between the forecasted spending and actual dividend payment based on past dividend per share to measure the variation in dividend payout.

$$DDiv(t) = [\, Div(t) - dps(t-1) * Outstanding(t)] \,/\, MV(t-1) \quad (1)$$

In which,

DDiv(t) represents the dividend change between year t and year t-1

Div(t) is the total money that company has spent for dividend payout at year t,

dps(t-1) stands for the dividend per share in the previous year (t-1),

Outstanding(t) is the total outstanding share of the firm at year t

MV(t-1) is simply the market value of the firm in the last year.

By assessing the variance in current and past dividend payouts, the author aims to establish the relationship between the repurchase yield and changes in the organization's dividend. Observations on whether repurchasing leads to an increase or reduction

in the amount spent on dividend payouts can unveil additional contemporaneous connections between these financial practices.

The below multivariate regression model was applied to effectively test the insign relationship among the capital distribution approach of the listed organization in Vietnamese security market.

$$Ryield_t = a1 + a2\ DDiv_t + a3\ DDivt\hat{}2 + a4\ Casht_{-1} + a5\ MB_{t-1} + a6\ Log(TA)_{t-1} + a7\ Lev_{t-1} + error\ term \quad (2)$$

Table 2 outlines the definitions and formulas for the objective of testing the substitution hypothesis between share repurchases and dividend payouts. The expectation is a negative correlation between the testing elements Ryield and its primary independent variable, DDiv. This suggests that an increase in repurchase activities may influence a lower spending on dividend distribution in year t compared to its previous yield. Conversely, a significant positive coefficient may indicate an independent relationship between these two variables, reflecting a complementary influence on the company's capital payout policy.

To explore potential nonlinear relationships, the square of DDiv is introduced into the model. The positive sign of the cash variable is expected to align with the free cash flow hypothesis. Practicing buybacks as a signal to additional investors, indicating the company is undervalued, would result in a significantly negative coefficient of log(TA). Larger companies, offering clearer business information and building shareholder confidence, are generally considered less undervalued in the market.

The market is anticipated to react to the book or reserve ratio (MB_Ratio), representing the company's future growth. When companies retain additional cash for investment plans, the spending for payouts is expected to be minimized, reflected in the negative relationship between MB_Ratio and repurchases. Furthermore, companies with an increased or high debt ratio in their financial structure are likely to have fewer resources for share buybacks, indicated by the expected negative sign for the Lev variable.

In concerning about the impact of state control and tax policy on the company's capital distribution, the study will apply various comparison sub-samples based on government ownership. This approach aims to offer a broader perspective on research findings. The companies will be divided into two groups based on government involvement as a block holder or not. According to Vietnamese security law, shareholders holding at least 5% of outstanding stock are considered block holders, recognized as activists with influential voting rights. The researcher establishes a group called Gov5, comprising companies where the government is a block holder with an additional 5% share, granting it voting rights and influence over managerial and business decisions.

Based on the observation, the researcher determines that from 174 completed repurchase, there are around half 92 buyback which belong to those companies with government investment. Moreover, from 92

Table 2. Variable definitions

Variable	Definition	Expected sign
Ryield	Repurchase yield, defined as the total value of conducted repurchase divided by market value of equity in the corresponding year;	
Ddiv	Change in dividend = (Current Dividend- Previous Dividend)/Market capitalization in current year	(-) : substitute (+) : complement
Cash	(Cash + Cash equivalent + short-term investment)/Total Asset	+
MB_ratio	Market to Book ratio = (Market value of Equity + Total Asset - Book value of Shareholder equity) / Total asset	-
Log(TA)	Logarithm value of Firm's total asset	-
Lev	(Short-term debt + Long-term debt)/ Total Asset	-

practices around 90 to 80% of were belonging to the companies having the state as their blockholder which holds around 5% of outstanding share.

IV. Results and Discussions

A. General Statistic

Table 3 presents comprehensive statistics for all factors, offering an overall view of the characteristics of listed Vietnamese enterprises employing buyback programs during the observation period. Panel A of Table 3 summarizes general information, revealing a significant variation in repurchase yield (Ryield) across companies. Some firms engage in substantial repurchases, reaching nearly 27% of their market value, while others allocate minimal funds for share buybacks. The managerial intent, beyond distribution purposes, may influence these diverse practices. For example, companies might repurchase a modest number of shares to control outstanding shares or support employee stock option plans, with less emphasis on distribution.

The Change in dividends (DDiv) highlights a negative mean and median, indicating that, on average, companies pay less in dividends than expected. The unfulfilled dividend payments are redirected to alternative forms of payouts, such as share repurchases, suggesting a potential substitution connection between payout policies.

The explicative factors, Cash, Mb_ratio, Ln_TA, and Lev, exhibit fluctuations around the mean, with varying distances between their maximum and minimum values, emphasizing a broad range in firm financial ratios within the sample. This diversity ensures the sample's representation of the entire

Table 3. Descriptive statisic

Panel A: General Characteristics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
Ryield	0.026	0.007	0.269	0.000	0.045	174
DDiv	-0.015	-0.003	0.672	-0.710	0.126	174
Cash(-1)	0.199	0.169	0.679	0.003	0.158	174
MB_ratio(-1)	1.346	0.989	6.018	0.396	0.984	174
Ln_TA(-1)	11.909	11.793	13.864	10.595	0.664	174
Lev(-1)	0.198	0.165	0.741	0.000	0.193	174

Panel B: Sample Distribution

Market		HNX	HOSE	Total
Industry	Basic Materials	6	19	25
	Consumer Goods	4	44	48
	Consumer Services	10	7	17
	Health Care	0	11	11
	Industrials	22	40	62
	Oil & Gas	0	2	2
	Technology	2	2	4
	Utilities	0	5	5
Total		44	130	174

Note:
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash*; *MB_ratio*; *Log(TA)*; *Lev*

market, serving as a metric for the precision of subsequent findings.

Panel B of Table 3 provides additional insights, including industrial and market distribution. Notably, corporations listed on the Ho Chi Minh stock exchange (HOSE) account for nearly three-quarters of total share repurchase activity, comprising 130 completed repurchases, compared to 44 on the Hanoi stock exchange (HNX). Given that larger corporations are typically listed on HOSE while small and medium-sized enterprises (SMEs) are on HNX, it suggests that firms with more advanced capital might have greater motivation for share repurchases in the Vietnamese market.

Regarding industry categorization, industrial enterprises dominate both markets in terms of share repurchase activity, with a total of 62 out of 174 observations. Consumer service companies on HNX rank second with 10 completed campaigns, while consumer goods companies on HOSE lead in share repurchasing with 44 operations.

The correlation coefficients of the dependent variables and key testing variables are displayed in Table 4. Notably, cash and leverage (Lev) exhibit a significant negative correlation of -0.451, indicating a notable association between a firm's capital and its debt ratio. This negative relationship is logical, as an increase in leverage leads to higher debt obligations, resulting in a reduced amount of cash on hand. Concerning the link between the explained variable Ryield and tested variables, the market-to-book ratio (MB_ratio) exhibits the highest association at -0.269. Specifically, MB_ratio strongly correlates negatively with repurchase yield (Ryield).

Table 5 illustrates the distribution of completed share repurchases based on the degree of change in dividend (DDiv). The sample is distinctly divided into two groups in two inverted U-shaped terms, encompassing 174 completed buybacks. The left side represents firms with a DDiv smaller than zero, indicating they paid less dividend than projected. In this group, corporations with a reduction in dividends from zero to -10% account for 55% of repurchasing activities, constituting 44.25% of the entire repurchase. This trend gradually diminishes to 0% and then transitions to the next inverted U-shape on the right side. On this side, companies distributing more dividends within the zero to 10% range of the predicted value peak at 32.76% of the entire repurchase.

In this regard the suitable imagination might be revealed from Figure 1 for the clear reflection of

Table 4. Correlation analysis

Variables	RYIELD	CASH(-1)	MB_RATIO(-1)	LN_TA(-1)	LEV(-1)	DDIV
RYIELD	1.000					
	-					
CASH(-1)	-0.064	1.000				
	(0.402)	-				
MB_RATIO(-1)	-0.269	0.166	1.000			
	(0.000)	(0.029)	-			
LN_TA(-1)	-0.096	-0.138	0.261	1.000		
	(0.210)	(0.069)	(0.001)	-		
LEV(-1)	0.028	-0.451	-0.299	0.381	1.000	
	(0.716)	(0.000)	(0.000)	(0.000)	-	
DDIV	-0.046	0.095	0.080	0.072	-0.096	1.000
	(0.549)	(0.211)	(0.294)	(0.346)	(0.210)	-

Note: The p-value are reported in parentheses
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash; MB_ratio*; *Log(TA)*; *Lev*

Table 5. Distribution of Share repurchases by the Change in dividend (DDiv)

DDIV	No of Repurchase	% Rep	Average Ryield	% firm
-30%	5	2.87%	0.054	5%
-30% to -20%	2	1.15%	0.003	2%
-20% to -10%	13	7.47%	0.059	13%
-10% to 0%	77	44.25%	0.023	55%
0%	7	4.02%	0.041	5%
0% to 10%	57	32.76%	0.020	44%
10% to 20%	10	5.75%	0.008	10%
20% to 30%	2	1.15%	0.040	2%
>30%	1	0.57%	0.201	1%

Note:
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv*denotes Change in dividend

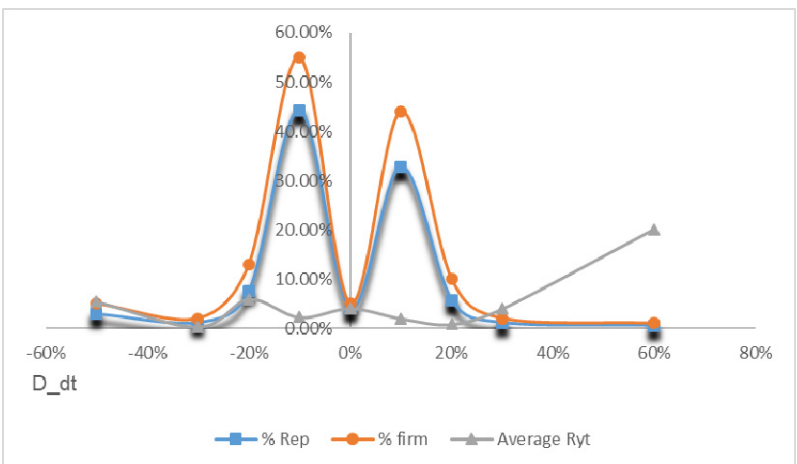

Figure 1. Distribution of Share repurchases by the Change in dividend (Ddiv)

their relationship. It might be important evidence for non-leaner findings.

B. Substitution and Complementary Effects between Share Repurchase and Cash Dividends

The Hausman test yields a negligible p-value at 10%, suggesting that the null hypothesis of "individual specific effects are random" cannot be rejected. Consequently, random effects are deemed suitable for panel regression, and due to the short observation period (10 years) relative to the cross-section (approximately 174 repurchase observations), Period Random Effects are statistically inapplicable. Hence, Cross-section Random Effects are employed for testing the coefficient between the explanatory variables.

Table 6 will showcase primary tests with nonlinear relationships using panel regression, in which it reveals a substantial positive-nonlinear association between dividend change (DDiv) and buyback. The coefficients of DDiv and DDiv2 are significantly positive (0.051 and 0.212, respectively) at 5% and 1% significance levels. This data aligns with the complementary theory, indicating that dividends and

Table 6. Panel regression for the relationship between share repurchase and dividend payout

Dependent Variable: RYIELD				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.083	0.078	1.056	0.292
DDIV	0.051**	0.020	2.484	0.014
DDIV^2	0.212***	0.047	4.527	0.000
CASH(-1)	-0.013	0.022	-0.597	0.551
MB_RATIO(-1)	-0.015***	0.005	-3.097	0.002
LN_TA(-1)	-0.003	0.007	-0.407	0.685
LEV(-1)	-0.012	0.022	-0.528	0.598
Cross-section random	*Yes*			
R-squared	0.161			
Adj R^2	0.131			
F-Stastistic	5.344			
Prob (F-Stastistic)	0.000			
Obs.	174			
Hausman Test		*Chi-Sq. Statistic*	*Chi-Sq. d.f.*	*Prob.*
		10.61116	6	0.1012

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash*; *MB_ratio*; *Log(TA)*; *Lev*

share repurchases are distinct distribution strategies. Firms can allocate their earnings after taxes and other liabilities for either dividend distribution or share buyback. Moreover, the F-statistic's p-value being less than 1% suggests that explanatory variables can collectively influence the dependent variable. While most explanatory factors exhibit the expected signs, only Cash has a negative sign instead of a positive one. Nevertheless, the MB_ratio is significantly negative at the 1% significance level, supporting the idea that firms may reduce cash distribution to sustain future growth, with a coefficient of -0.015.

C. Robustness Test

Table 7 incorporates various robustness checks to enhance the precision of the panel regression results. Option (1) involves a subsample of firms practicing both dividend payout and share repurchase simultaneously (Dummy_Div = 1). In model (2), tax levels were considered with varying conditions (Tax_0 = 1 and Tax_0 = 0) alongside Dummy_Div=1. During a particular economic recession period, the Vietnamese government employed a zero-tax policy to support individual investors compared to other dominant or blockholder investors. In tests (3) and (4), the impact of government control on the firm's payment policy is explored using state blockholders with over 5% and 10% outstanding shares (Gov 5 and Gov10 groups, respectively). Test (5) employs Tobit regression to ensure consistency in the research due to potential censoring of the dependent variable's observation range.

The robustness tests in Table 7 generally exhibit consistent results with the sign and qualitative similarity to the panel regression test. Notably, the strong positive association of DDiv and DDiv2 with the buyback yield in model (3) during higher tax periods and in models (4) and (5) when the state is a blockholder of the business may be linked to earlier findings, suggesting that Vietnamese state firms adopt high dividend payment policies even during higher tax periods to boost shareholder confidence.

Additionally, for an alternative approach in identifying the repurchase activity's nature, the Repurchase ratio (Rep_ratio) is introduced as the dependent variable in the main model. This ratio, calculated by dividing the total volume of share repurchase by the firm's outstanding shares before buyback, provides direct insight into the impact of financial news on the firm's status. The results of this alternative model are presented in Table 8.

Table 8 demonstrates consistent results whether

Table 7. Robustness by different conditions for the relationship between share repurchase and dividend payout

Dependent Variable: RYIELD

Variable	Conditions applied					
	(1) *Dummy Div=1*	(2) *Dummy_Div=1* *Tax_0=1*	(3) *Dummy_Div=1* *Tax_0=0*	(4) *Dummy_Div=1* *Gov5=1*	(5) *Dummy_Div=1* *Gov10=1*	(6) *TOBIT*
C	0.074	0.133	0.011	0.042	0.059	0.080
DDIV	0.053***	-0.04	0.072***	0.059**	0.056**	0.023
DDIV^2	0.213***	0.585***	0.135***	0.203**	0.223***	0.217***
CASH(-1)	0.009	-0.013	0.002	0.015	-0.003	-0.022
MB_RATIO(-1)	-0.012**	-0.016**	-0.010**	-0.005	-0.004	-0.011*
LN_TA(-1)	-0.003	-0.008	0.004	-0.002	-0.003	-0.003
LEV(-1)	-0.002	-0.004	-0.011	0.036	0.018	-0.020
Cross-section random	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Adj R^2	0.349	0.358	0.217	0.031	0.043	
Obs.	158	54	104	85	77	174

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash*; *MB_ratio*; *Log(TA)*; *Lev*

Table 8. Robustness test using Repurchase ratio as explained variable

Dependent Variable: REP_RATIO

Sample group	(1) Raw			(2) Dummy_Div = 1		
Variables	Coef.	t-value	Sig (P)	Coef.	t-value	Sig (P)
C	0.017	0.298	0.766	0.007	0.121	0.904
DDIV	0.034**	2.186	0.030	0.037**	2.306	0.023
DDIV^2	0.063*	1.815	0.071	0.065*	1.892	0.061
CASH(-1)	-0.017	-1.033	0.303	-0.005	-0.273	0.785
MB_RATIO(-1)	-0.01***	-2.940	0.004	-0.008***	-2.291	0.023
LN_TA(-1)	0.002	0.498	0.619	0.003	0.510	0.611
LEV(-1)	-0.031*	-1.888	0.061	-0.024	-1.406	0.162
Cross-section random	*Yes*			*Yes*		
Adj R^2	0.091			0.051		
Observations	163			148		

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash*; *MB_ratio*; *Log(TA)*; *Lev*

the dependent variable is repurchase yield (Ryield) or repurchase ratio (Rep_ratio) in the panel regression test. Positive and significant coefficients are observed for DDiv and DDiv2 (0.034 and 0.063 at 5% and 10% significance levels, respectively), while MB_ratio exhibits a negative and significant coefficient (-0.01 at 1% significance level). The buyback ratio test also reveals a negative and significant coefficient of -0.031 at the 10% significance level for the Leverage (Lev) variable. This negative coefficient supports the notion that corporations with greater liability obligations may allocate less to repurchasing.

Moreover, when considering a restricted condition of firms practicing both dividend and repurchase at the end of the year (Dummy_Div = 1), the results remain quantitatively similar to the original group, reinforcing the identified association between a firm's share repurchase and dividend distribution. Given the observed nonlinear effect in the model, the analysis extends to explore potential variations across different groups or ranges of the observed samples using quantile regression.

Table 9 indicates that the relationship between the DDiv variable and repurchase yield becomes negatively significant at higher quantiles, specifically at the 10% level for the 65th quantile and the 1% level for upper quantiles starting from the 70th quantile. This suggests that the group characterized by high repurchase yields, where an inverse relationship between repurchase yield and dividend payout is observed, is more inclined towards an interchange between the two fund distribution policies. This finding supports the notion of a substitution connection between share repurchase and dividend distribution practices employed by Vietnamese corporations.

Furthermore, the comparison with the original results highlights a strong positive-positive sign for DDiv and DDiv2 in the entire sample, while a negative-positive sign is observed in the upper-level quantile. This suggests that the complementary effect is particularly pronounced among firms that exhibit lower repurchase yield. In the context of the overall sample of share repurchases in the Vietnamese stock

Table 9. Quantile regression for the relationship between share repurchase and dividend payout

Dependent Variable: RYIELD

Variable	Random effect	Quantile regressions									
		10th quant	20th quant	30th quant	40th quant	50th quant	60th quant	65th quant	70th quant	80th quant	90th quant
C	0.083 (0.292)	0.001 (0977)	0.003 (0.877)	0.015 (0.556)	0.013 (0.650)	0.020 (0.492)	0.048 (0.177)	0.054 (0.314)	0.022 (0.748)	0.014 (0.884)	0.135 (0.430)
DDIV	0.051** (0.014)	0.000 (0.985)	0.005 (0.863)	0.010 (0.757)	0.025 (0.509)	0.035 (0.316)	0.014 (0.887)	-0.095*** (0.009)	-0.109*** (0.000)	-0.103*** (0.000)	-0.079* (0.062)
DDIV^2	0.212*** (0.000)	0.001 (0.981)	0.005 (0.939)	0.009 (0.905)	0.030 (0.710)	0.050 (0.552)	0.378* (0.072)	0.551*** (0.000)	0.556*** (0.000)	0.514*** (0.000)	0.451*** (0.000)
CASH(-1)	-0.013 (0.551)	0.001 (0.938)	0.002 (0.817)	0.000 (0.963)	-0.002 (0.875)	-0.012 (0.252)	-0.012 (0.285)	-0.028 (0.124)	-0.037** (0.045)	-0.038 (0.273)	-0.053 (0.520)
MB_RATIO (-1)	-0.015*** (0.002)	0.000 (0.969)	-0.001 (0.596)	-0.001 (0.360)	-0.002 (0.236)	-0.003* (0.073)	-0.004** (0.023)	-0.005** (0.026)	-0.008*** (0.007)	-0.010** (0.013)	-0.012** (0.019)
LN_TA(-1)	-0.003 (0.685)	0.000 (0.981)	0.000 (0.955)	-0.001 (0.703)	0.000 (0.863)	0.000 (0.897)	-0.002 (0.499)	-0.002 (0.729)	0.002 (0.735)	0.004 (0.666)	-0.004 (0.770)
LEV(-1)	-0.012 (0.593)	0.000 (0.996)	-0.002 (0.818)	-0.003 (0.797)	-0.001 (0.917)	-0.006 (0.619)	-0.018 (0.210)	-0.013 (0.589)	-0.028 (0.290)	-0.011 (0.729)	0.024 (0.714)
Pseudo R^2	0.161	0.002	0.008	0.021	0.030	0.041	0.059	0.084	0.119	0.169	0.222
Adj R^2	0.131	-0.034	-0.027	-0.015	-0.005	0.007	0.025	0.051	0.088	0.140	0.194

Note: ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.
- The dependent variable *Ryield* denotes Dividend Yield
- The key testing variable *DDiv* denotes Change in dividend
- The controlling variable *Cash*; *MB_ratio*; *Log(TA)*; *Lev*

market, this dominance of the complementary approach is notable.

The market-to-book ratio (Mb_ratio) consistently exhibited a negative significance to repurchase yield across all quantiles, strongly supporting the idea that Vietnamese enterprises prioritize future investment plans and may curtail expenditures on buyback activities. However, the Cash variable displayed a negative significance at the 10% level in the 70th quantile, contrary to the expected positive correlation, indicating a lack of support for the free cash flow hypothesis in this study.

V. Conclusion

In summary, this study has filled a knowledge gap by examining the non-linear connection between different capital distribution strategies employed by Vietnamese listed companies. The panel regression indicates a robust non-linear relationship with a significant complementary effect between share repurchases and dividend distribution policies. This finding is further substantiated through robustness tests conducted under diverse conditions. However, quantile regression reveals that the upper-level group, characterized by high repurchase yields, leans more towards a substitution relationship, where dividends and buybacks are interchangeable. In contrast, the lower quantile firms demonstrate a strong influence of the complementary approach. In practice, business stakeholders, particularly capital sponsors and shareholders, should consider this aspect in connection with firms' capital fluctuation activities.

Moreover, the signaling and free cash flow hypotheses are deemed to have an insignificant influence on the correlation between capital distribution methods. Nevertheless, the research suggests that, particularly in the context of share repurchase decisions, Vietnamese enterprises should carefully consider their future growth.

Although the findings are intriguing, our study has limitations, particularly regarding the influence of stock dividends through various practices when companies are partially dominated or affected by the government. Additionally, the empirical findings may be restricted to Vietnamese firms. As a result, studies incorporating different control variables and data from other countries might yield diverse results and financial implications. Ultimately, there is unquestionably scope for further enhancement, a matter that will be explored in future research.

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